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Emerson®

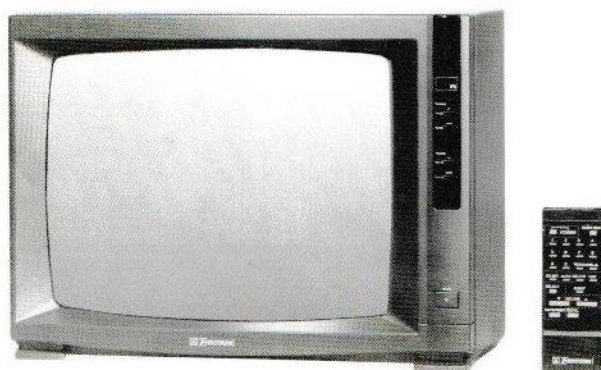
SERVICE MANUAL

**MODEL
TC1966D**

CAUTION

Before servicing the chassis, read the "IMPORTANT SERVICE SAFETY INFORMATION" on page 2 of this manual.

CORRECTION NOTICE
IN TC1365 FILE



19" REMOTE CONTROL COLOR
TELEVISION WITH ON-SCREEN
PICTURE ADJUSTMENTS

AKB **AUTOMATIC KINE BIAS**

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SPECIFICATIONS

AC POWER INPUT	120V ± 10% 60Hz
AC POWER CONSUMPTION	102 Watts @ 120V
PICTURE SIZE	19" (MEASURED DIAGONALLY)
FOCUS LENS	Bipotential
AUDIO POWER OUTPUT RATING	2.0 Watts
FREQUENCY RESPONSE	250Hz 0 ± 3dB 6KHz -2 ~ -10dB
SPEAKER SIZE	4", 0.36 oz Magnet
VOICE COIL IMPEDANCE	8 ohms at 600Hz
ANTENNA INPUT IMPEDANCE	75 ohm, Coaxial Input
RECEIVING CHANNELS	
VHF	2-13
UHF	14-69
CATV	1 (5A) 95-99 (A5-A1) 14-22 (A-I) 23-36 (J-W) 37-65 (AA-FFF) 66-125 (GGG-125)
INTERMEDIATE FREQUENCY	
Picture IF Carrier Frequency	45.75MHz
Sound IF Carrier Frequency	41.25MHz
Color Sub-Carrier Frequency	42.17MHz
WEIGHT	42 lbs
DIMENSIONS	21-9/16" (W)x15-13/16" (H)x18-11/16" (D)

SERVICE PUBLICATION

#02-92

IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner cluster when operating the chassis.

These receivers have a "polarized" AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the "polarized" type.

Since the chassis of this receiver is connected to one side of the AC supply during operation, service should not be attempted by anyone not familiar with the precautions necessary when working on these types of equipment.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

Certain HV failures can increase X-ray radiation. Receivers should not be operated with HV levels exceeding the specified rating for their chassis type. The maximum operating HV specified for the chassis used in these receivers is $32\text{kV} \pm 1.0\text{kV}$ at zero beam current with a line voltage of 120V AC. Higher voltage may also increase the possibility of failure in the HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the receiver that could cause a rise in high voltage, or operating supply voltages. No changes should be made to the original design of the receiver.

Components shown in the shaded areas on the schematic diagram and/or identified by Δ in the replacement parts list should be replaced only with exact factory recommended replacement parts. The use of unauthorized substitute parts may create shock, fire, X-ray radiation, or other hazards.

To determine the presence of high voltage, use an accurate high impedance HV meter connected between the second anode lead and the CRT dag grounding device. When servicing the High Voltage System, remove static charges from it by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube dag and 2nd anode lead (have AC line cord

disconnected from AC supply).

The picture tube used in this receiver employs integral implosion protection. Replace with a tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely. Keep others without shatterproof goggles away.

When removing springs or spring mounted parts from the tuner, tuner cluster or chassis, shatterproof goggles must be worn. Keep others without shatterproof goggles away.

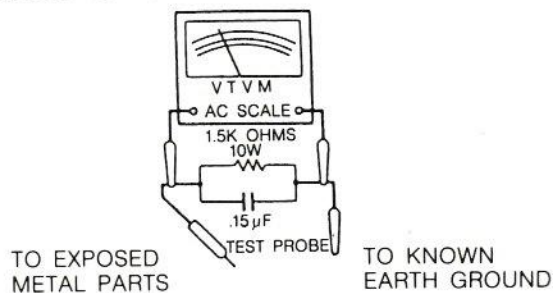
Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

If available, measure current using an accurate leakage current tester. Any reading of 0.35mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.

If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a 0.15 μF capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.



ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

Use an isolation transformer when performing any service on this chassis.

Before removing the anode cap, discharge electricity because it contains high voltage.

When removing a PCB, related component or after unfastening or changing a wire, be sure to put it back in its original position.

Inferior silicon grease can damage IC's and transistors. When replacing IC's and transistors, use only specified silicon grease (YG6260M). Remove all old silicon before applying new silicon.

1-1: Prepare the following measurement tools for electrical adjustments.

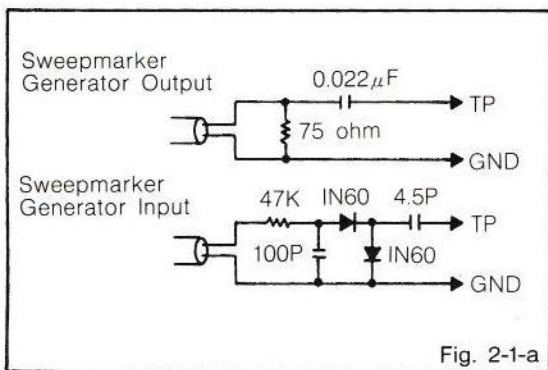
1. Sweepmarker Generator
2. VIF/SIF Unit
3. Oscilloscope (2 Channel Type)
4. Digital Voltmeter
5. AC Voltmeter
6. Color Bar Generator

2. BASIC ADJUSTMENTS

2-1: VIF AND DET

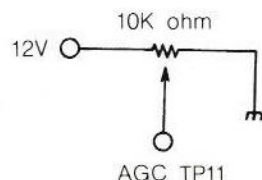
NOTE

Connect input and output terminals of the sweepmarker generator to the circuit as shown in Fig. 2-1-a, then adjust it.

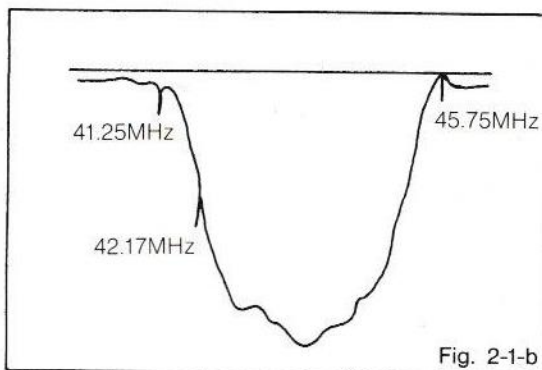


1. Connect output terminal of the sweepmarker generator to TP of the tuner pack. (Connect a 2.7K ohm resistor between them.)
2. Connect input terminal of the sweepmarker generator to TP4.

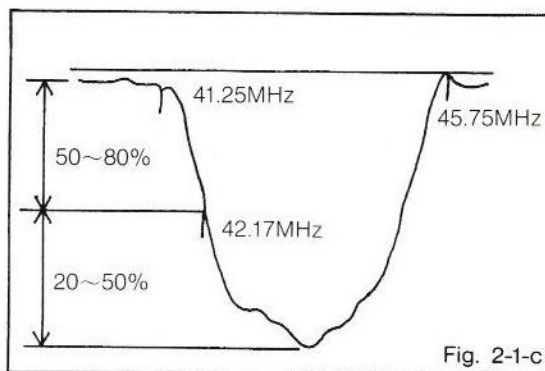
3. Connect the 10K ohm variable resistor to IF AGC terminal (TP11), 12V line and ground, then adjust to make the waveform of the oscilloscope readable.



4. Adjust L205 until the waveform marker (45.75MHz) becomes as shown in Fig. 2-1-b.



5. Confirm the waveform marker (42.17MHz) becomes as shown in Fig. 2-1-c.



6. Connect the AFT adjustment oscillator (45.75MHz) to the tuner pack TP through a 2.7K ohm resistor.
7. Connect a 1M ohm resistor between the digital voltmeter's positive probe and TP6.
8. Adjust L204 until the voltage of TP6 is 4.5VDC.

ELECTRICAL ADJUSTMENTS

2-2: RF AGC

NOTE

Adjust after performing adjustments in section 2-1.

2-2-A: In case of weak electric field.

1. Tune to a noisy channel.
2. Adjust **VR201** until noise is at minimum.
3. Change the channel, confirm other channels are normal.

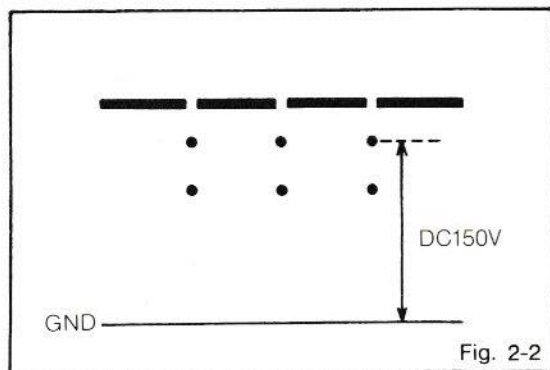
2-2-B: In case of strong electric field.

(Radio frequency interference can cause diagonal streaks to appear.)

1. Adjust **VR201** until diagonal streaks are at minimum.
2. If there is still a problem after adjusting **VR201**, install an attenuator to the antenna terminals, then repeat step 1.
3. Confirm noise does not appear.
4. Change the channel, confirm other channels are normal.

2-3: CUT OFF

1. Receive the color bar pattern.
2. Using the remote control, set contrast and brightness to minimum position.
3. Connect the oscilloscope to **TP24**.
4. Adjust the screen control until voltage is 150VDC. (Refer to Fig. 2-2)



2-4: FOCUS

1. Receive the broadcasting signal.
2. Adjust the focus control until picture is distinct.

2-5: VERTICAL SIZE

1. Receive the crosshatch pattern from the color bar generator.
2. Adjust the brightness and contrast controls until the crosshatch pattern is distinct.
3. Adjust **VR401** until the center of crosshatch is square.
4. Receive broadcasting signal, then confirm picture is normal.

2-6: VERTICAL POSITION

1. Receive the color bar pattern.
2. Using the remote control, set contrast and brightness to maximum position.
3. Adjust **VR402** until horizontal line of the color bar comes to approximate center of the CRT.

2-7: HORIZONTAL POSITION

1. Receive the color bar pattern.
2. Adjust **VR403** until the color width of both screen edges are equal.
3. Receive broadcasting signal, then confirm picture is normal.

2-8: SUB BRIGHT

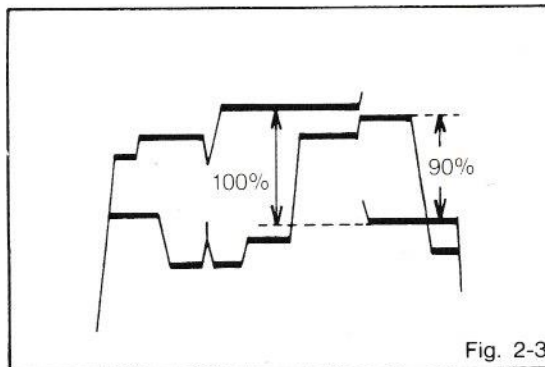
NOTE

Adjust after performing adjustments in section 2-3.

1. Receive the monochrome pattern.
2. Adjust **VR101** until 0% of gray scale begins to lighten.

2-9: SUB COLOR

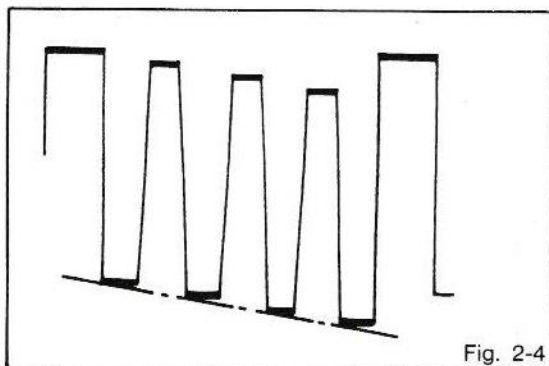
1. Receive the color bar pattern.
2. Using the remote control, set contrast to maximum position.
3. Using the remote control, set brightness, tint and color to center position.
4. Connect the oscilloscope to **TP22**.
5. Adjust **VR102** until the waveform becomes as shown in Fig. 2-3.



ELECTRICAL ADJUSTMENTS

2-10: SUB TINT

1. Receive the color bar pattern.
2. Using the remote control, set contrast to maximum position.
3. Using the remote control, set brightness, tint and color to center position.
4. Connect the oscilloscope to TP23.
5. Adjust VR103 until the waveform becomes as shown in Fig. 2-4.



2-11: CONSTANT VOLTAGE

1. Receive the broadcasting signal.
2. Using the remote control, set brightness, volume and contrast to minimum position.
3. Connect the digital voltmeter to TP8.
4. Adjust VR501 until the voltage is 130VDC.

2-12: HORIZONTAL SIZE (BAR INDICATOR)

1. Receive the broadcasting signal.
2. Select the sharpness setting of the picture.
3. Adjust L101 until both sides of characters are inside the screen.

3. PURITY AND CONVERGENCE ADJUSTMENT

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a degauss coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. (Refer to Fig. 3-1)
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

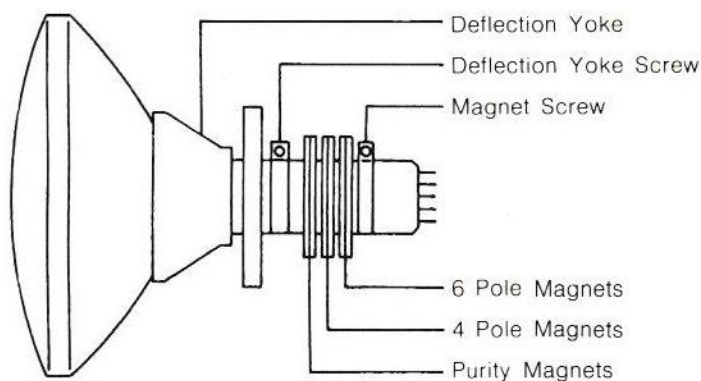


Fig. 3-1

ELECTRICAL ADJUSTMENTS

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. (Refer to Fig. 3-2-a)
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. (Refer to Fig. 3-2-b)

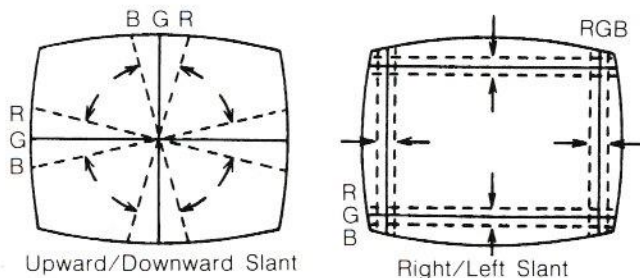
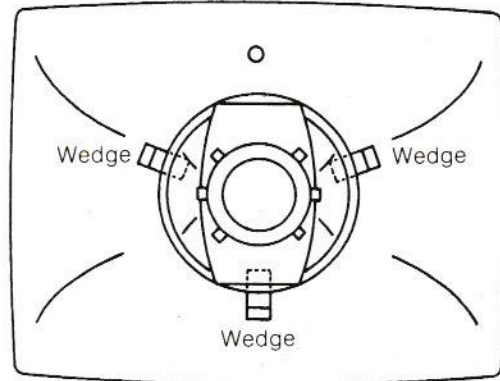


Fig. 3-2-a



Wedge Position

Fig. 3-2-b

HOW TO RESET THE MICROCOMPUTER

CONDITIONS

※ When resetting the memory function, use the reset switch. This switch will reset the following:

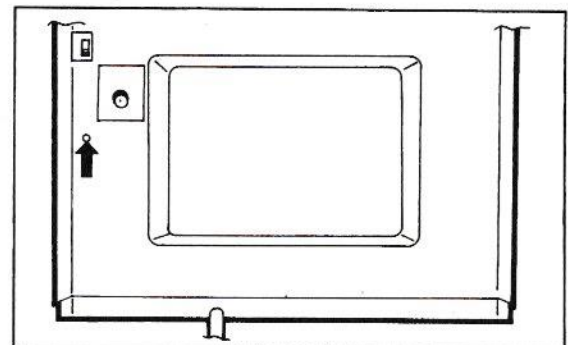
1. Auto channel memory.
2. Micon error movement.
3. Sound level.

PROCEDURE

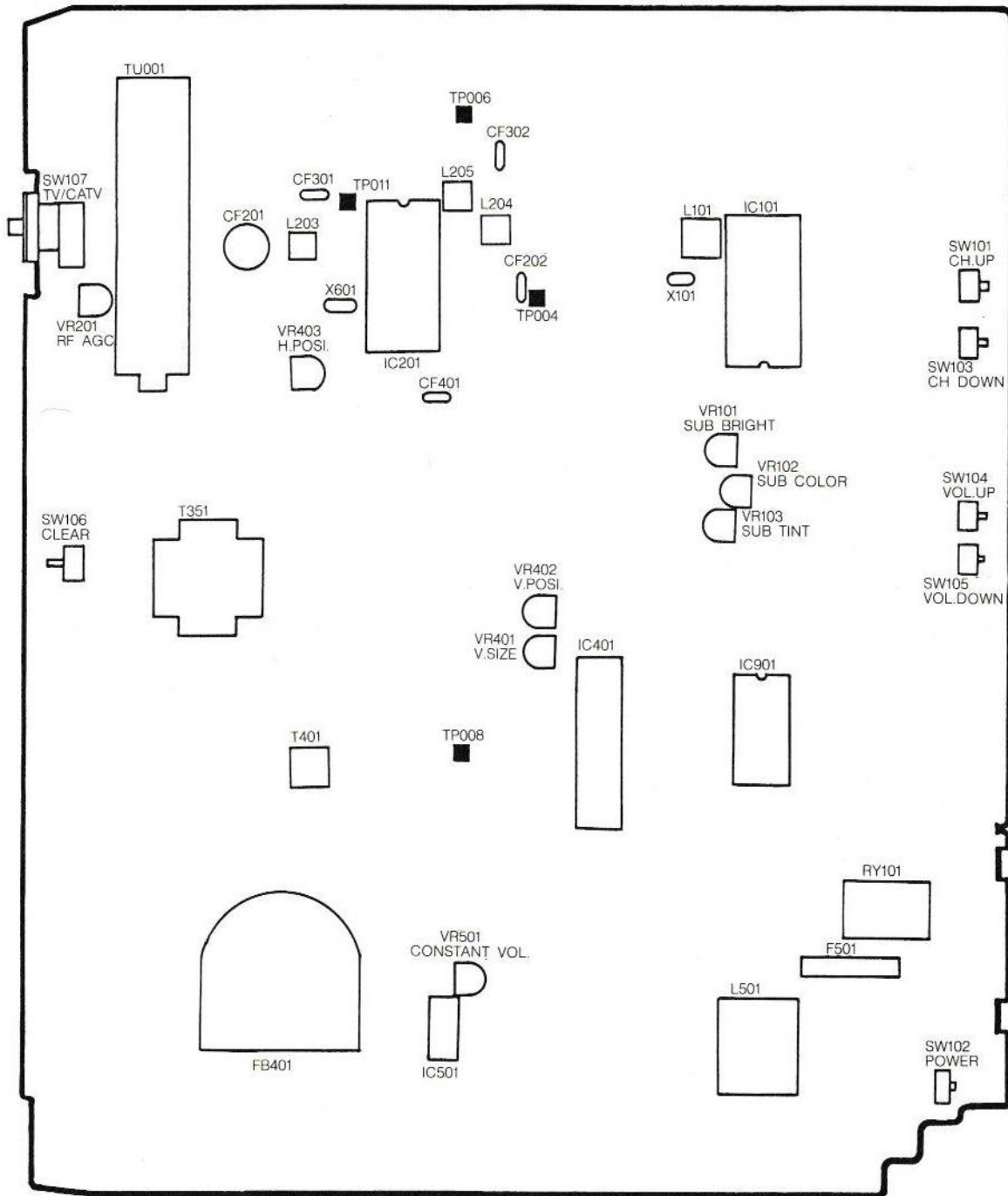
1. The reset switch is accessed through an unmarked hole, which is shown by an arrow in the illustration.
2. The unit is reset when a long, narrow probe (eg, the end of a paper clip) is inserted into the hole.

NOTE

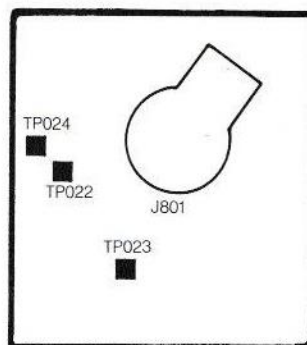
When using the reset switch, make sure you are properly grounded.



MAJOR COMPONENTS LOCATION GUIDE

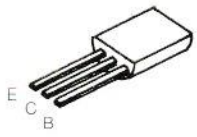
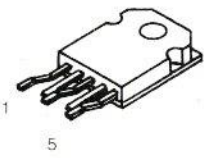
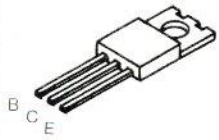
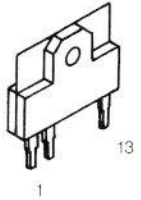
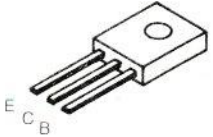
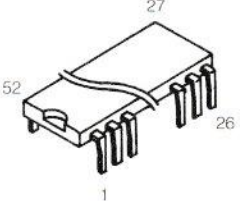

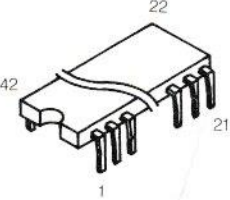
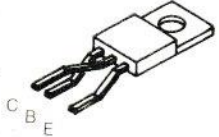
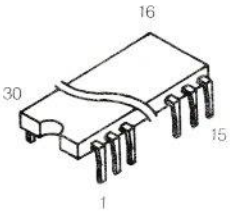
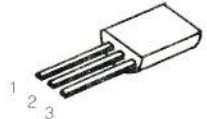
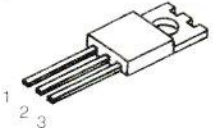


MAIN P.C.BOARD

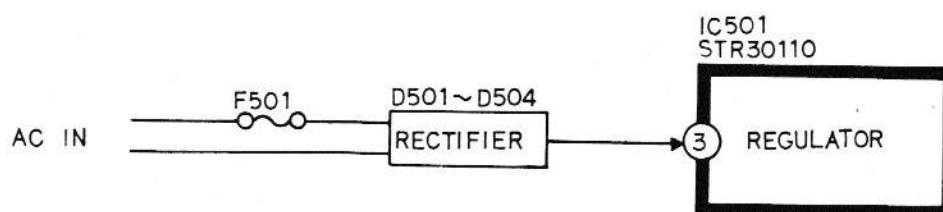
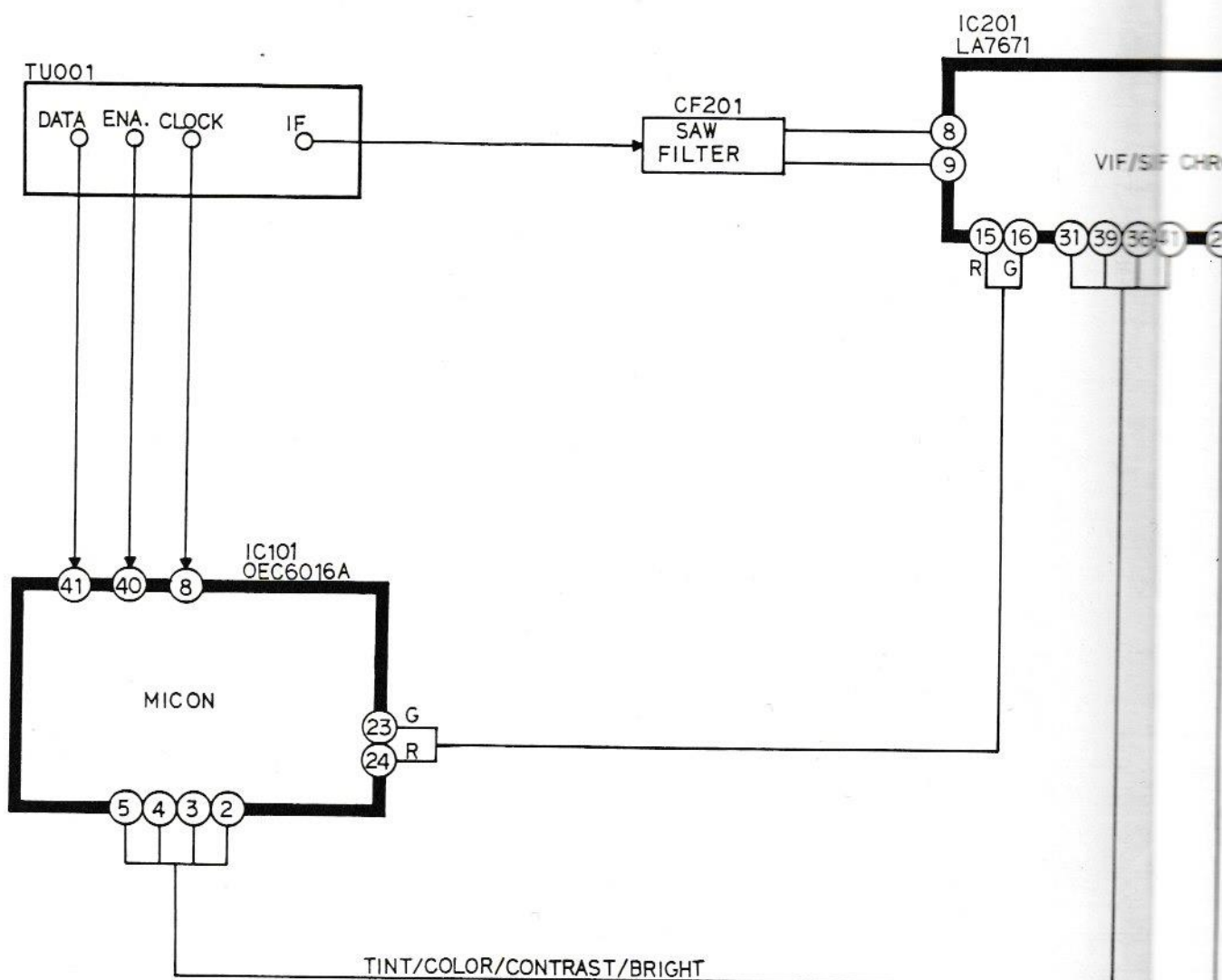


CRT P.C.BOARD

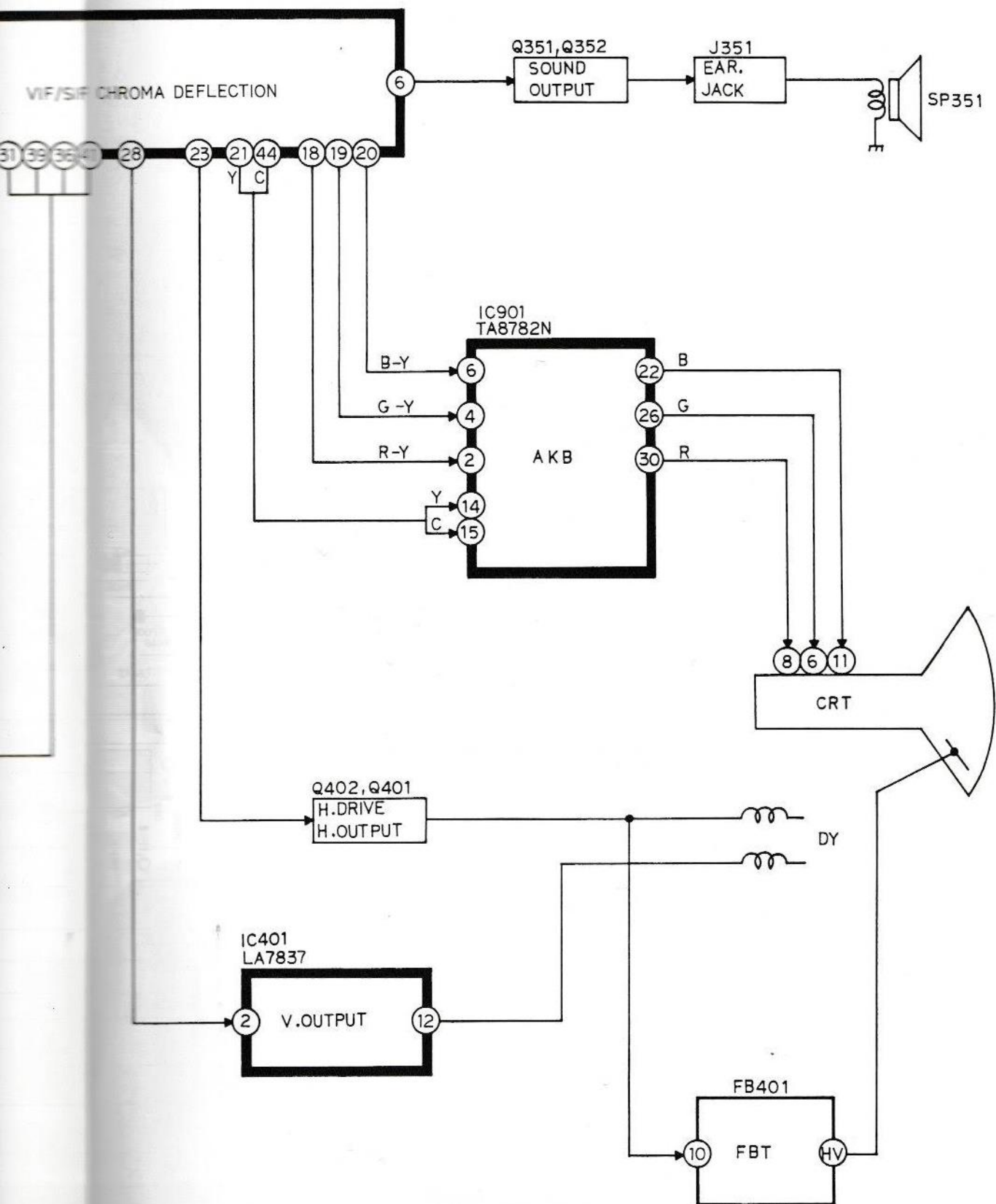
SEMICONDUCTOR BASE CONNECTIONS

ILLUSTRATION	DESCRIPTION	ILLUSTRATION	DESCRIPTION
	2SA952 2SC2271 2SA1624 2SC945A 2SA733		STR30110
	2SC4159		LA7837
	2SC2621E		LA7671
	2SC4217		OEC6016A
	2SD2333		TA8782N
	UPC78L06J-T1		
	L78M09-SA		

BLOCK DIAGRAM



CK DIAGRAM

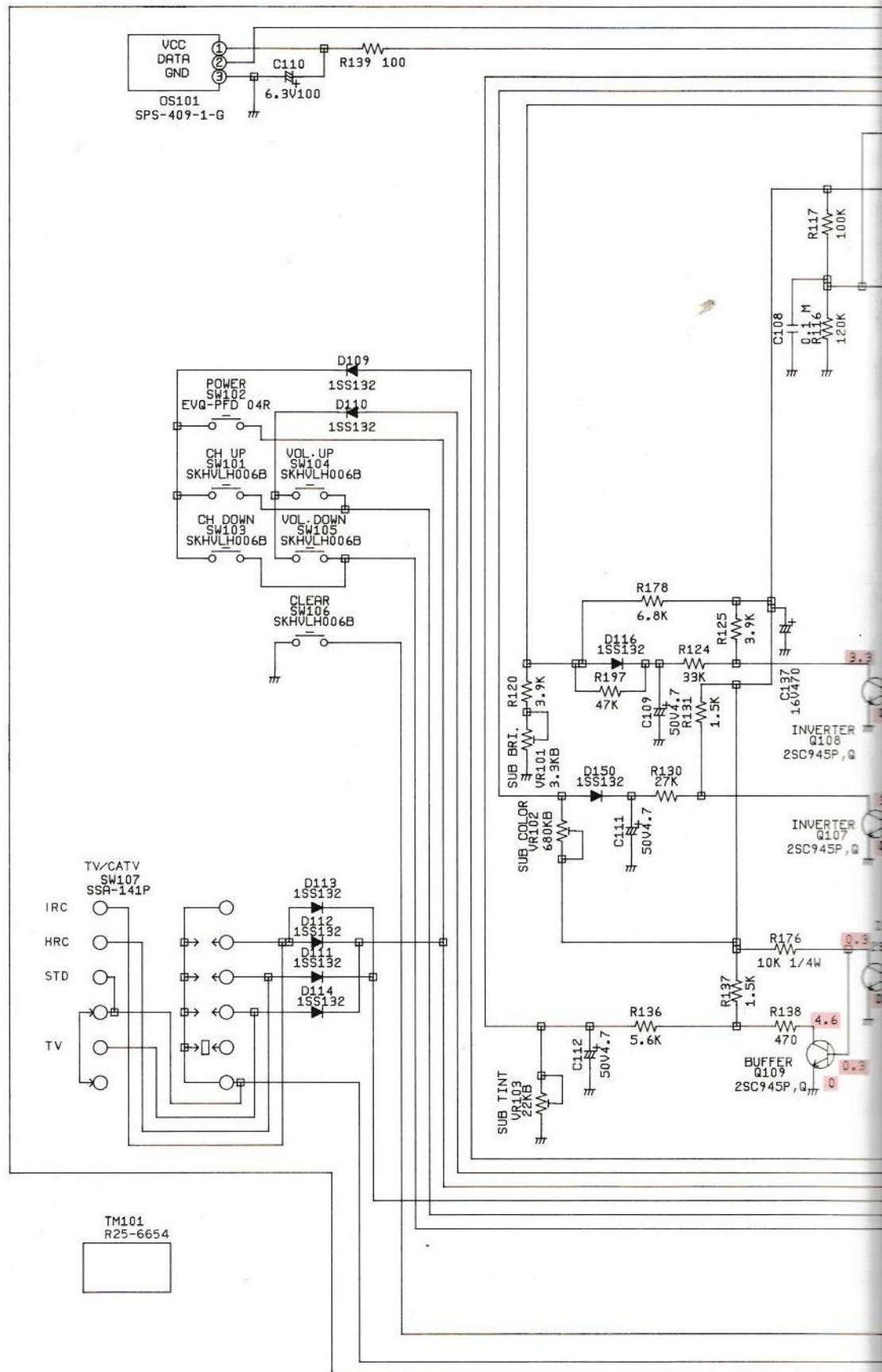





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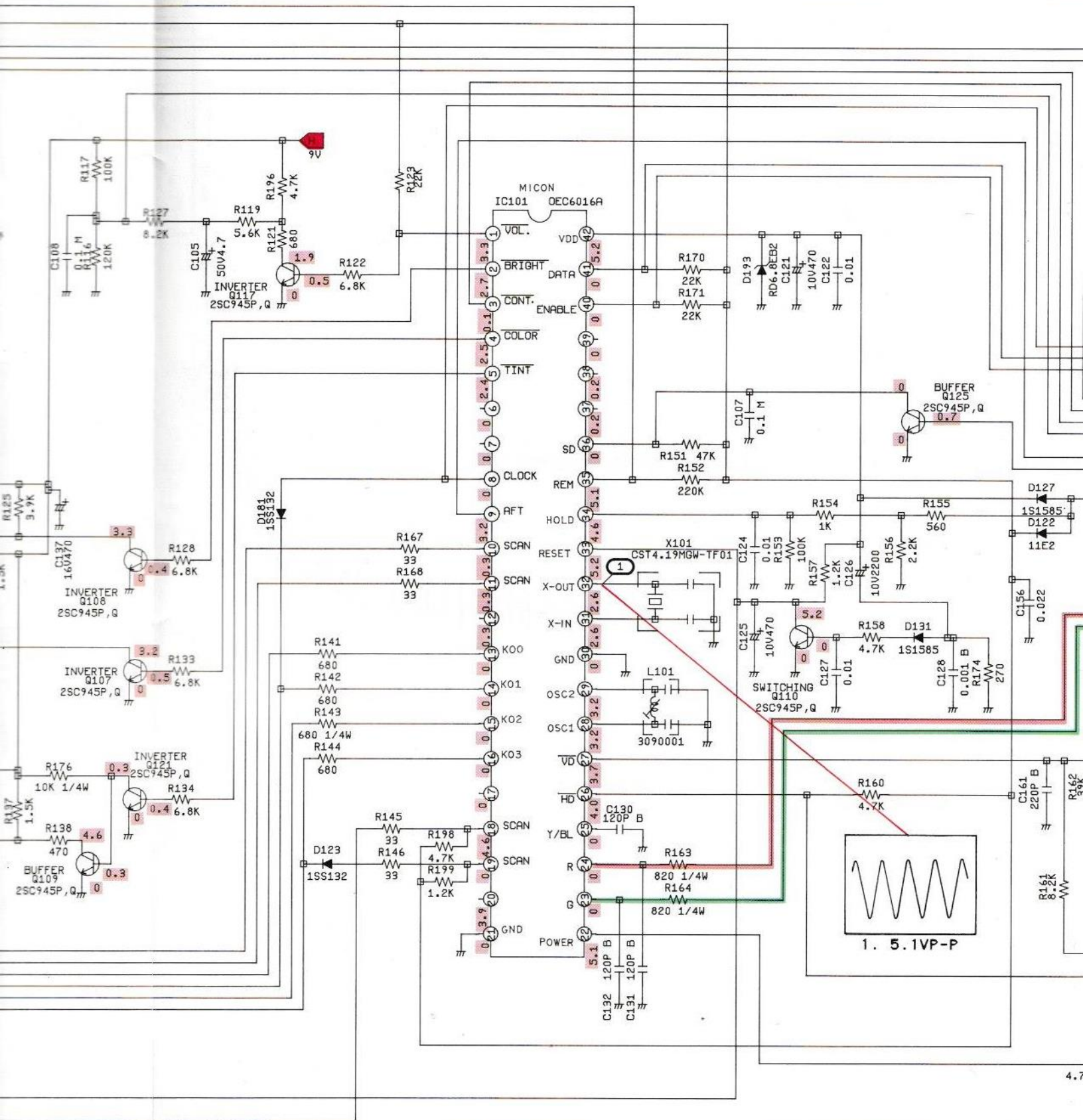
A micrograph of the TE0395B device. The image shows a green printed circuit board (PCB) with a white solder mask. A large, rectangular, light-colored component is visible, labeled "TE0395B". To the left of this component, there is a small, rectangular, light-colored component labeled "R360". Below the "R360" label, there are four circular pads labeled "S-", "T-", "T+", and "S+". To the right of the "TE0395B" component, there is a small, rectangular, light-colored component labeled "J35".

NOTE : W.F.WAVEFORM

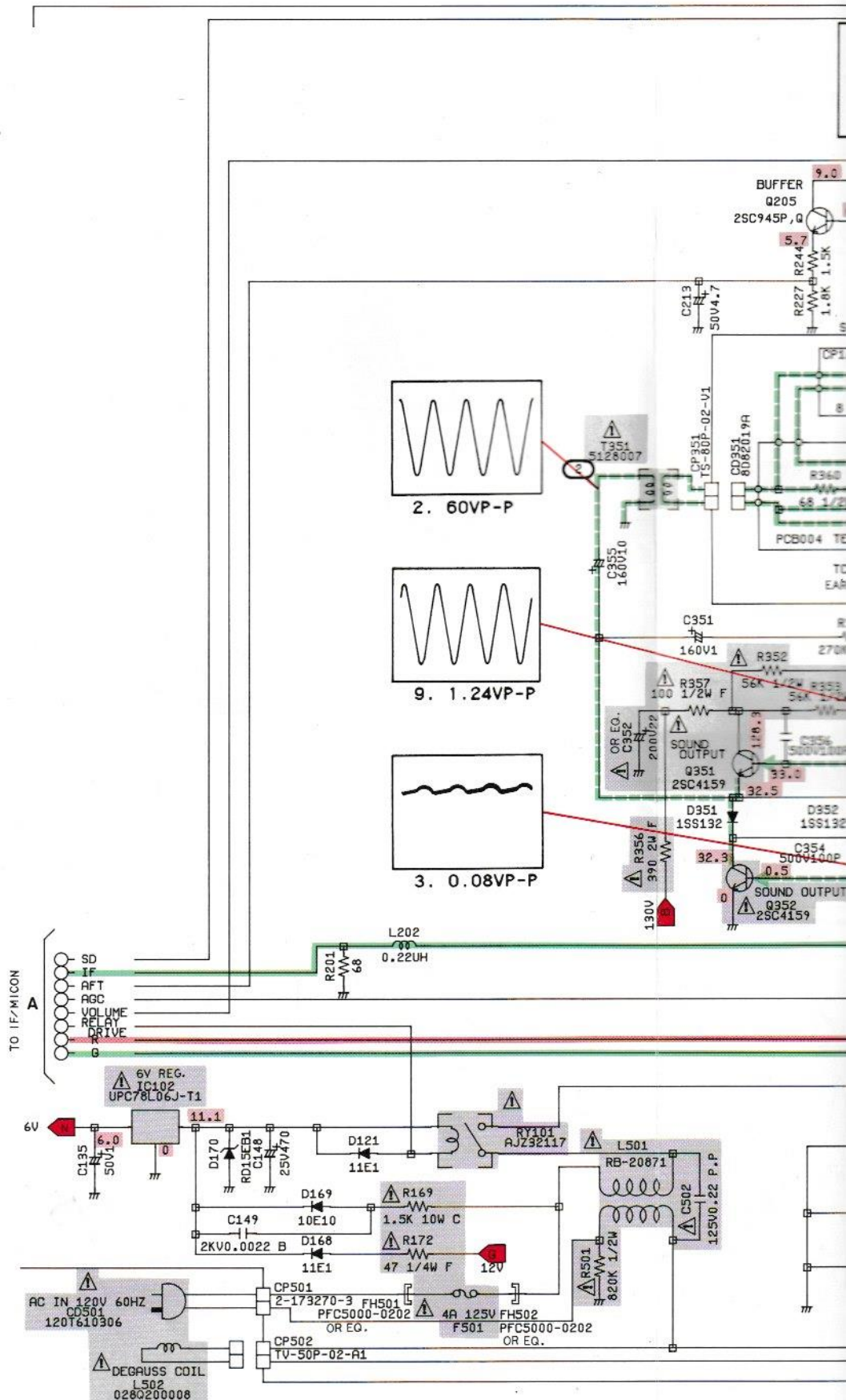


CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

IF/ MICON SCHEMATIC DIAGRAM

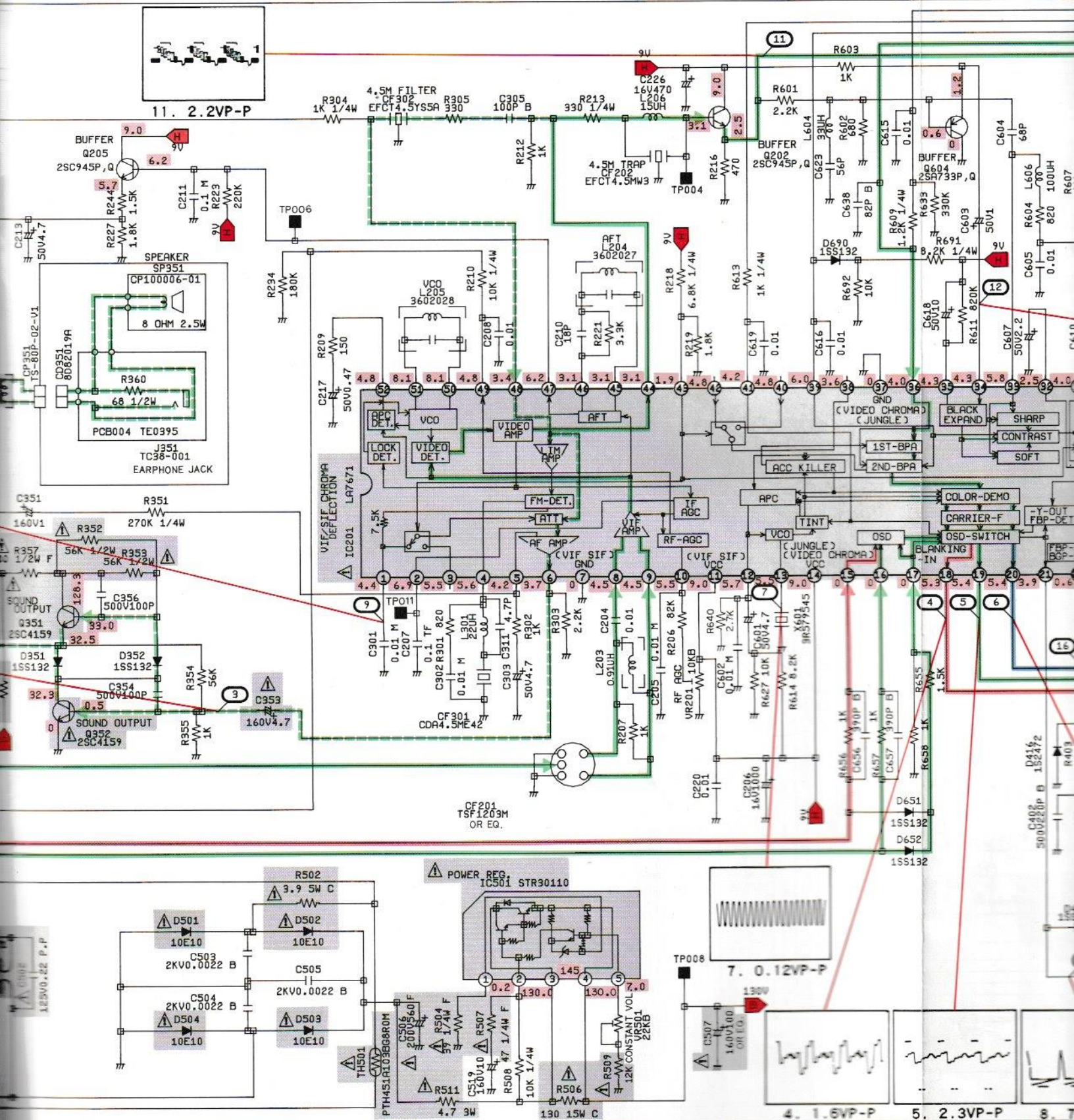


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.



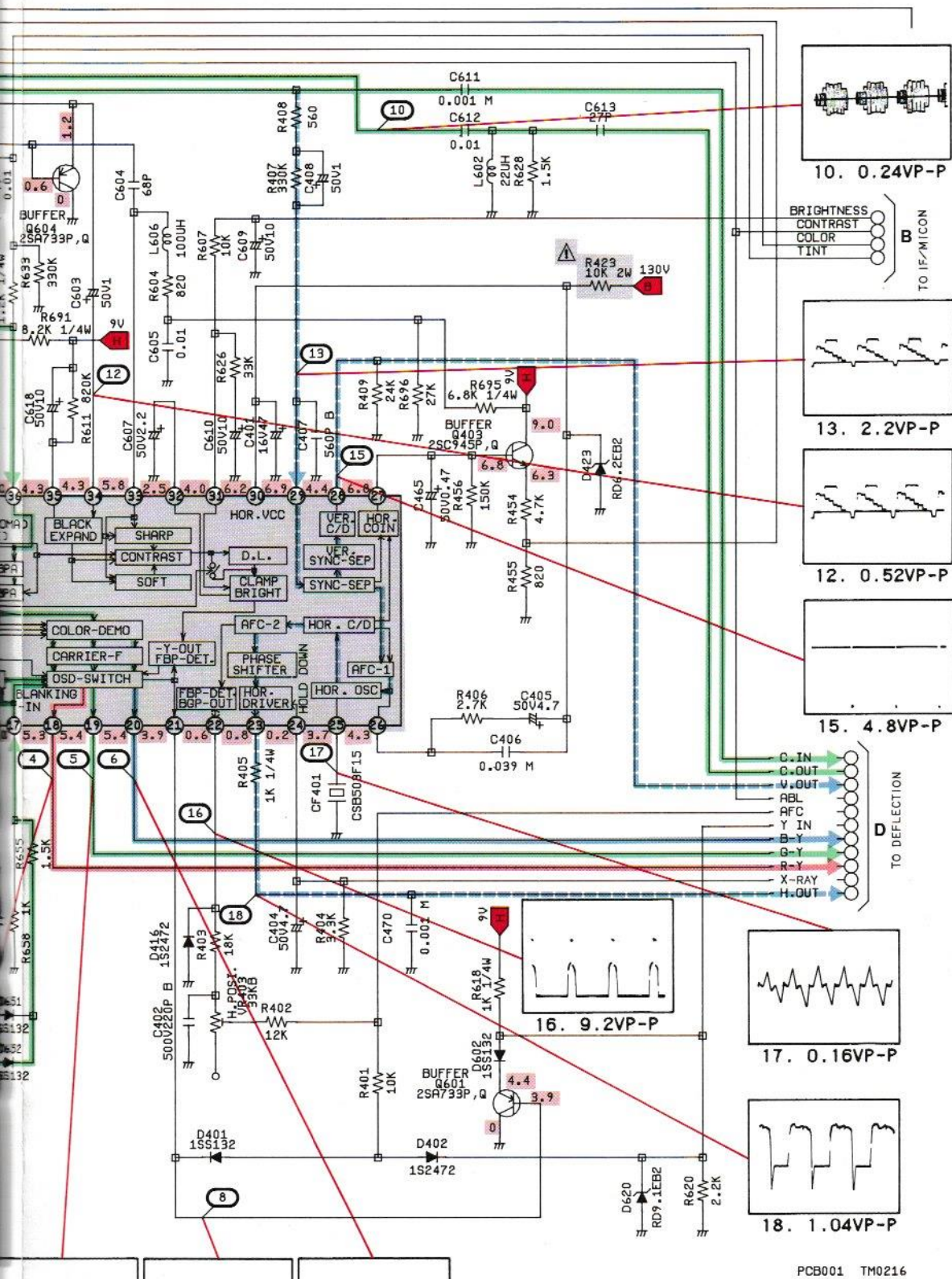
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CHROMA/POWER/AUDIO SCHEMATIC DIAGRAM



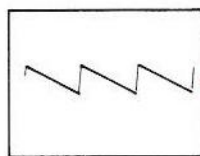
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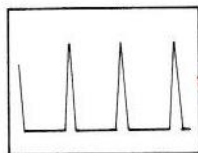


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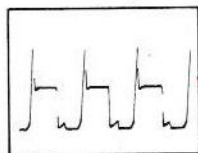
- R. SIGNAL
- VIF/G. SIGNAL
- - - AUDIO SIGNAL
- B. SIGNAL
- ... DEFLECTION SIGNAL



14. 2.0VP-P

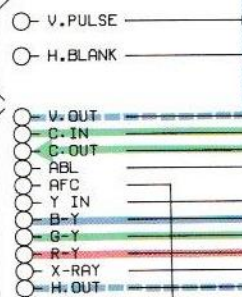


21. 1080VP-P

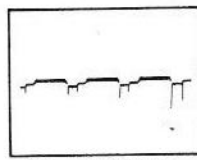
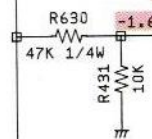


19. 100VP-P

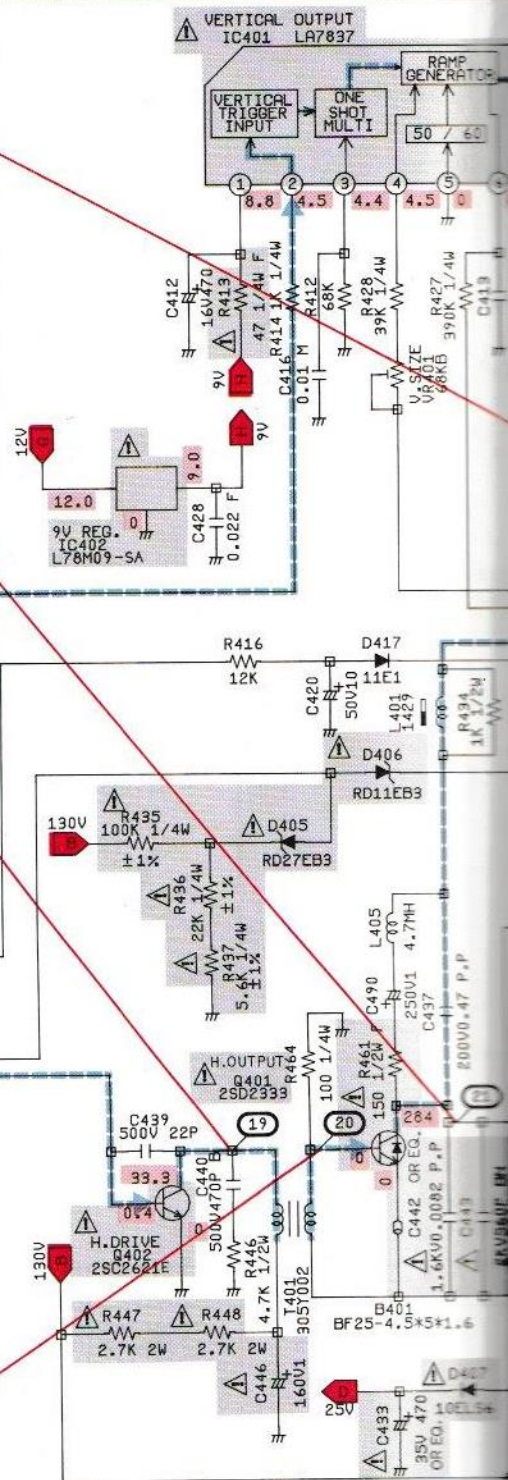
TO IF/MICON
C
TO CHROMA/POWER/AUDIO
D



BUFFER
Q602
2SC945P, Q

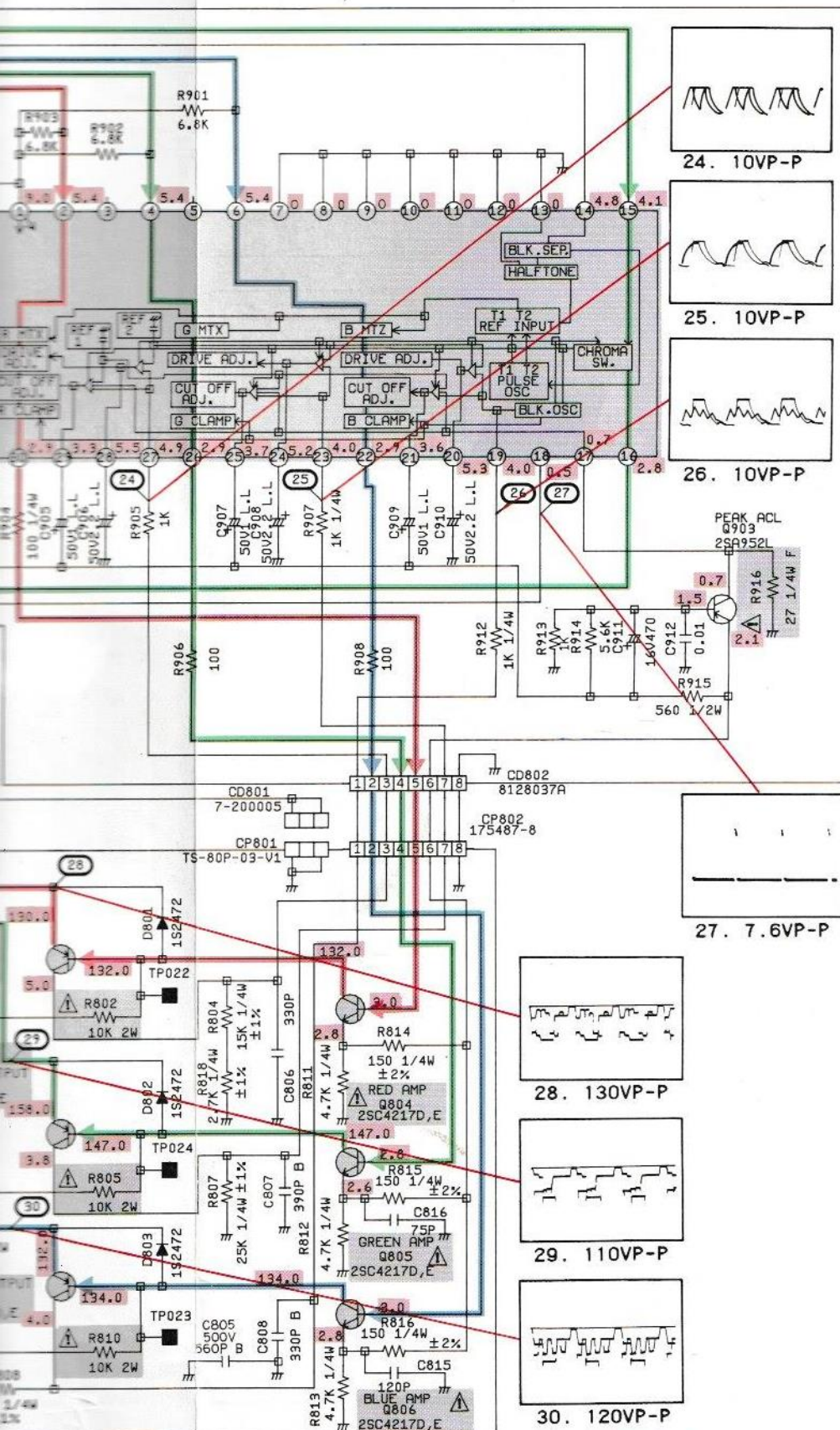


20. 11VP-P



CAUTION: SINCE THESE PARTS MARKED BY Δ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE
OF PRINTING AND SUBJECT TO CHANGE WITHOUT



24. 10VP-P

25. 10VP-P

26. 10VP-P

27. 7.6VP-P

28. 130VP-P

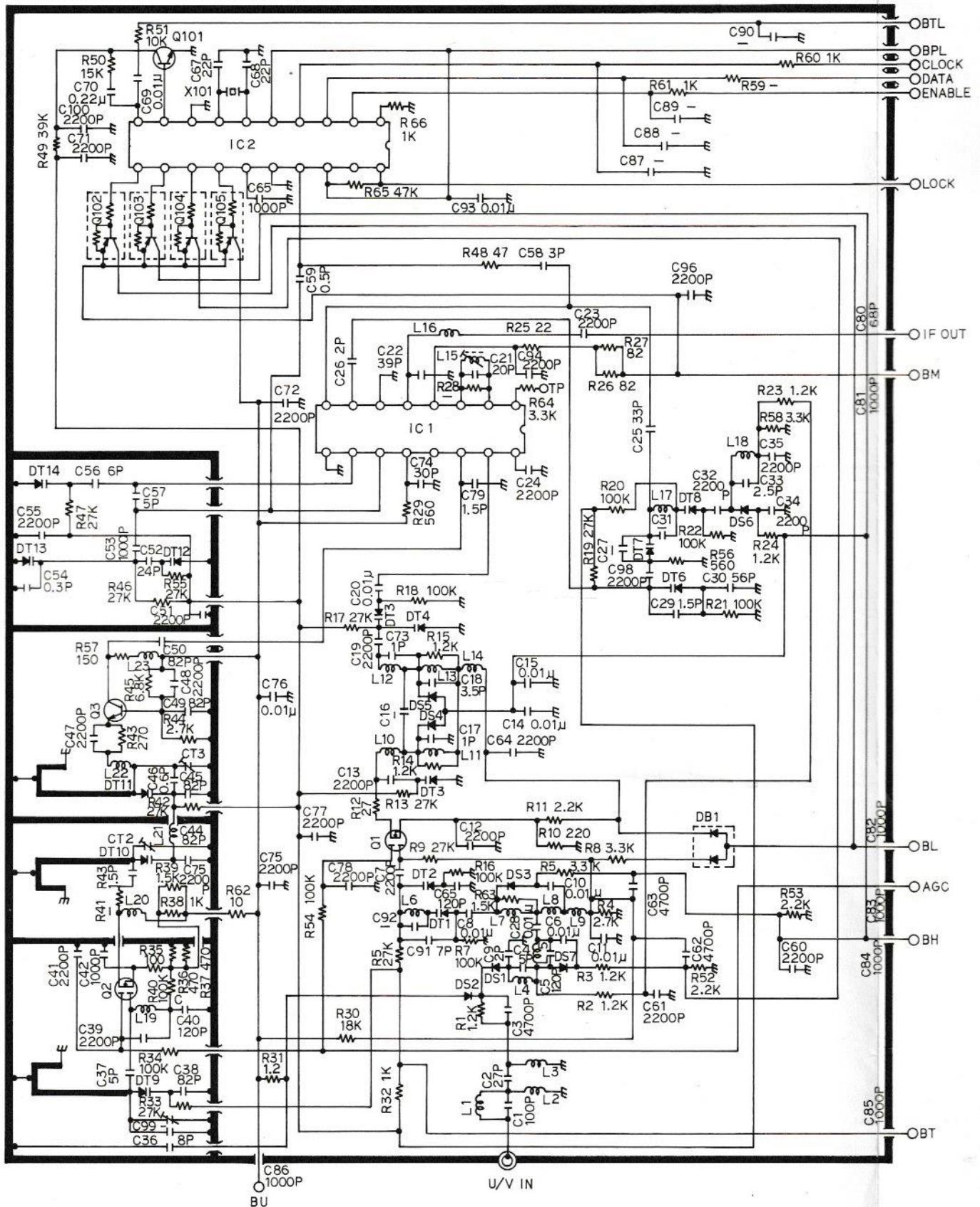
29. 110VP-P

30. 120VP-P

— R. SIGNAL
— G. SIGNAL
— B. SIGNAL
— DEFLECTION SIGNAL

TUNER SCHEMATIC DIAGRAM

ENV-568B0G3



NOTE: Tuner parts are not available.

When repairs are required, order a complete replacement tuner.

MECHANICAL EXPLODED VIEW

OBTL
OBPL
OCLOCK
ODATA
OENABLE

LOCK

IF OUT

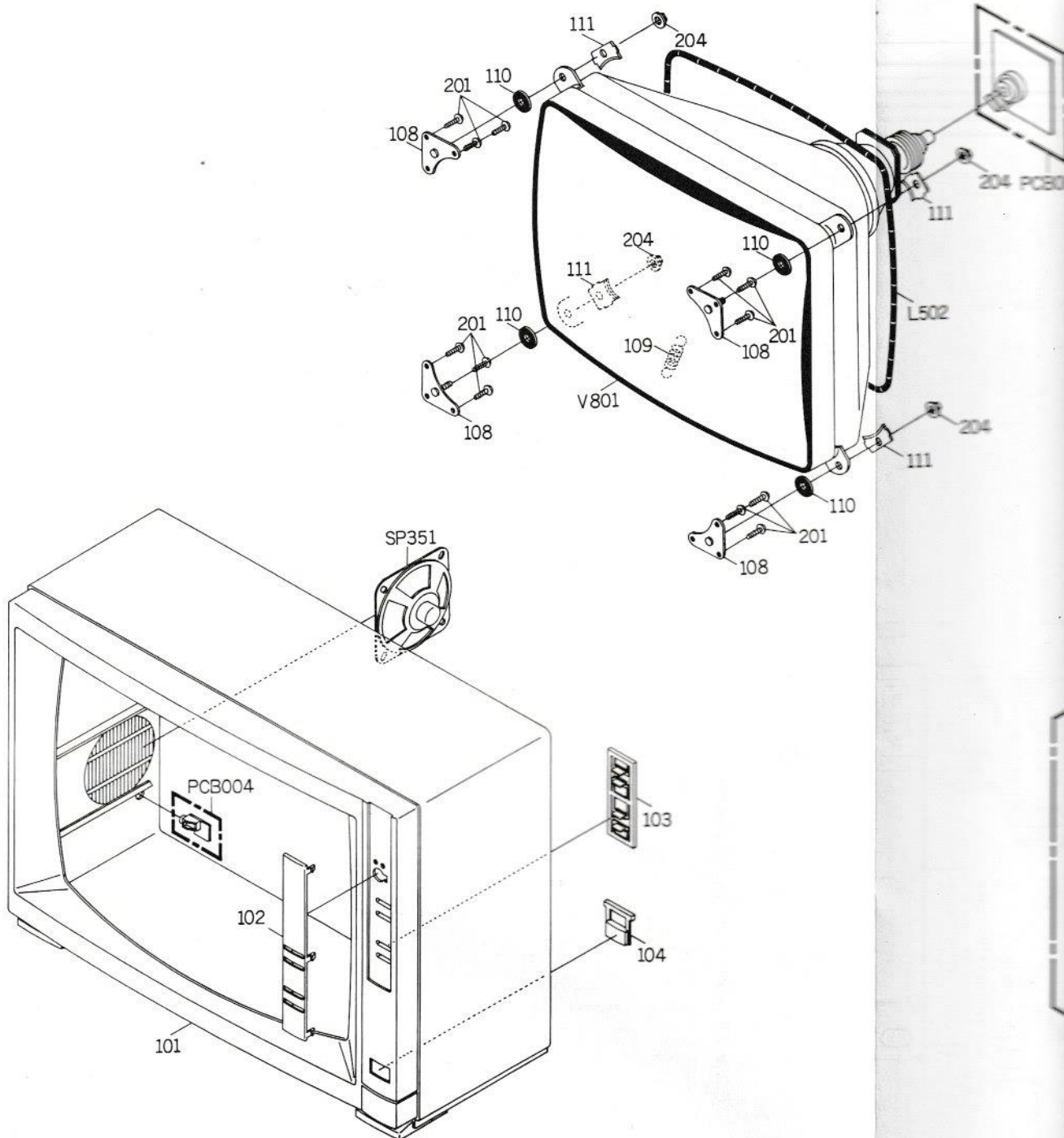
BM

BL

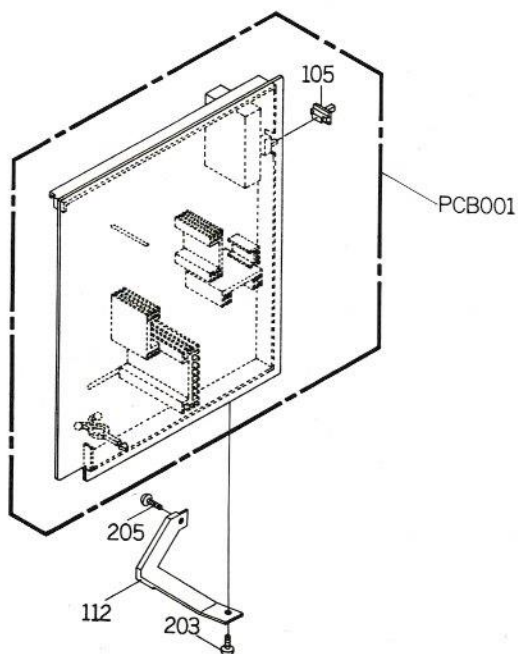
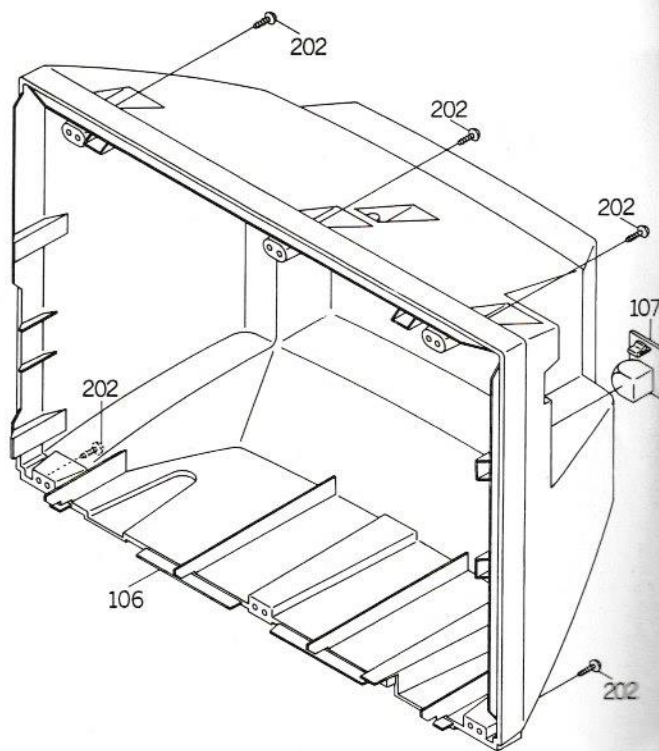
AGC

BH

OBT



REF. NO	PART NO	DESCRIPTION	REF. N
101	A39709A720 701APJ0028 7230003876 7240000737 7260000235	CABINET, FRONT ASS'Y CABINET, FRONT FILM, INFORMATION SHEET, FUSE SHEET, CRT SERVICEMAN	201 202 203 204 205
102	711AND0002	PLATE, FRONT	---
103	735APA0005	BUTTON, CHANNEL / VOLUME	---
104	735APJ0002	BUTTON, POWER	---
105	733TPA0010	KNOB, SLIDE	---
106	702APA0031 7222560503	CABINET, BACK SHEET, RATING	---
107	771TPA0018	PLATE, JACK	---
108	762TSA0018	ANGLE, CRT	---
109	741SUA0001	SPRING, EARTH	---
110	800AR00001	SHEET, CRT SUPPORT	---
111	761TSA0109	ANGLE, CRT SUPPORT	---
112	761TSA0158	ANGLE, FBT	---



REF. NO	PART NO	DESCRIPTION
201	8110240B04	SCREW,TAP TITE(P) BIND 4*20
202	8117540A64	SCREW,TAPPING(B0) TRUSS 4*16
203	8107630604	SCREW,TAP TITE(S) BRAZIER 3*6
204	8300560254	SL NUT WH25 M6
205	8110630A24	SCREW,TAP TITE(P) BRAZIER 3*12
---	JEASTFA02	WARRANTY CARD
---	JEASTFA17	REGISTRATION CARD
---	JEASTFA36D	ESP BROCHURE
---	JTVS00016	SAFETY INSTRUCTIONS
---	J3970443	ACCESSORY ORDER FORM
---	J3970901	INSTRUCTION BOOK
---	759TPA0002	HOLDER ANODE LEAD
---	791SHA0031	LAMIFILM,BAG
---	792AHA0020	PACKAGE,TOP
---	792AHA0021	PACKAGE,BOTTOM
---	793ACD0243	GIFT,BOX

[illegible]

ELECTRICAL REPLACEMENT PARTS LIST

THIS ELECTRICAL PARTS LIST IS A STANDARD PARTS LIST, BUT INTERCHANGEABLE PARTS MAY BE USED IN THE UNIT. SEE THE INTERCHANGEABLE PARTS LIST AFTER THE STANDARD PARTS LIST.

REF. NO	PART NO	DESCRIPTION	REF. NO	PART NO	DESCRIPTION
RESISTORS			SEMICONDUCTORS (CONT)		
△ R140	R615U4150J	R.FUSE 15 OHM 1/4W	△ D405	D92T0270B3	DIODE.ZENER RD27EB 3 TA11R
△ R169	R5W2CF152J	R.CEMENT 1.5K OHM 10W	△ D406	D92T0110B3	DIODE.ZENER RD11EB 3 TA11R
△ R172	R615U4470J	R.FUSE 47 OHM 1/4W	△ D407	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1
△ R192	R3B181680J	R.METAL OXIDE 68 OHM 1W	△ D408	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1
△ R352	R002T2563J	RC 56K OHM 1/2W	△ D410	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1
△ R353	R002T2563J	RC 56K OHM 1/2W	△ D411	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1
△ R356	R6148A391J	R.FUSE 390 OHM 2W	△ D416	D1VT024720	DIODE.SILICON 1S2472T-77
△ R357	R615U2101J	R.FUSE 100 OHM 1/2W	△ D417	D28T011E10	DIODE.SILICON 11E1TA1
△ R360	R00202680J	RC 68 OHM 1/2W	△ D423	D92T06R2B2	DIODE.ZENER RD6.2EB 2 TA11R
△ R413	R615U4470J	R.FUSE 47 OHM 1/4W	△ D501	D28T10E100	DIODE.SILICON 10E10-TA2B5
△ R423	R3B18A103J	R.METAL OXIDE 10K OHM 2W	△ D502	D28T10E100	DIODE.SILICON 10E10-TA2B5
△ R433	R635821R5J	R.FUSE 1.5 OHM 1/2W	△ D503	D28T10E100	DIODE.SILICON 10E10-TA2B5
△ R435	R425T4104F	R.METAL 100K OHM 1/4W	△ D504	D28T10E100	DIODE.SILICON 10E10-TA2B5
△ R436	R425T4223F	R.METAL 22K OHM 1/4W	△ D602	D1VT001320	DIODE.SILICON 1SS132T-77
△ R437	R425T4562F	R.METAL 5.6K OHM 1/4W	△ D620	D92009R1B2	DIODE.ZENER RD9.1EB 2
△ R439	R425T4153F	R.METAL 15K OHM 1/4W	△ D651	D1VT001320	DIODE.SILICON 1SS132T-77
△ R440	R425T4562F	R.METAL 5.6K OHM 1/4W	△ D652	D1VT001320	DIODE.SILICON 1SS132T-77
△ R441	R425T4153F	R.METAL 15K OHM 1/4W	△ D690	D1VT001320	DIODE.SILICON 1SS132T-77
△ R442	R6158A6R8J	R.FUSE 6.8 OHM 2W	△ D801	D1VT024720	DIODE.SILICON 1S2472T-77
△ R447	R3B18A272J	R.METAL OXIDE 2.7K OHM 2W	△ D802	D1VT024720	DIODE.SILICON 1S2472T-77
△ R448	R3B18A272J	R.METAL OXIDE 2.7K OHM 2W	△ D803	D1VT024720	DIODE.SILICON 1S2472T-77
△ R452	R6158A1R8J	R.FUSE 1.8 OHM 2W	△ IC101	I55D06016A	QEC6016A MICON
△ R461	R615U2151J	R.FUSE 150 OHM 1/2W	△ IC102	I02J98L060	UPC78L06J-T1 6V REGULATOR
△ R501	R002T2824J	RC 820K OHM 1/2W	△ IC201	I03DE76710	LA7671 VIF/SIF CHROMA DEFLECTION
△ R502	R5W2CD3R9K	R.CEMENT 3.9 OHM 5W	△ IC401	I03SD78370	LA7837 VERTICAL OUTPUT
△ R504	R615U4390J	R.FUSE 39 OHM 1/4W	△ IC402	I03B98M090	L78M09-SA 9V REGULATOR
△ R506	R5W2CG131J	R.CEMENT 130 OHM 15W	△ IC501	I2B49C1100	STR30110 POWER REGULATOR
△ R507	R611U4470G	R.FUSE 47 OHM 1/4W	△ IC901	I05DE87820	TA8782N AUTOMATIC KINE BIAS
△ R509	R001T6123J	RC 12K OHM 1/6W	Q107	TCLT009450	2SC945A(C)-T INVERTER
△ R511	R4B28B4R7J	R.METAL 4.7 OHM 3W	Q108	TCLT009450	2SC945A(C)-T INVERTER
△ R802	R3B18A103J	R.METAL OXIDE 10K OHM 2W	Q109	TCLT009450	2SC945A(C)-T BUFFER
△ R805	R3B18A103J	R.METAL OXIDE 10K OHM 2W	Q110	TCLT009450	2SC945A(C)-T SWITCHING
△ R810	R3B18A103J	R.METAL OXIDE 10K OHM 2W	Q117	TCLT009450	2SC945A(C)-T INVERTER
△ R916	R615U4270J	R.FUSE 27 OHM 1/4W	Q118	TCLT009450	2SC945A(C)-T INVERTER
CAPACITORS			Q119	TCLT009450	2SC945A(C)-T BUFFER
△ C140	E0E7T2471M	CE 470 UF 16V	Q120	TC3T022710	2SC2271(D.E)-AE RELAY DRIVE
△ C352	E027TC220M	CE 22 UF 200V	Q121	TCLT009450	2SC945A(C)-T INVERTER
△ C353	E0E5TB4R7M	CE 4.7 UF 160V	Q125	TCLT009450	2SC945A(C)-T BUFFER
△ C433	E02ST4471M	CE 470 UF 35V	Q202	TCLT009450	2SC945A(C)-T BUFFER
△ C434	E0E7T6220M	CE 22 UF 63V	Q205	TCLT009450	2SC945A(C)-T BUFFER
△ C436	E0E7T3471M	CE 470 UF 25V	Q351	TC30041590	2SC4159(D.E) SOUND OUTPUT
△ C437	P441F2474J	CMPP 0.47 UF 200V	Q352	TC30041590	2SC4159(D.E) SOUND OUTPUT
△ C442	P412A9822H	CMPP 0.0082UF 1.6KV	Q401	TDKF023330	2SD2333-(RQ) H.OUTPUT
△ C443	C0D0BN7S2K	CC 560 PF 2KV	Q402	TC3002621E	2SC2621E H.DRIVE
△ C444	C0D0BN7L2K	CC 330 PF 2KV	Q403	TCLT009450	2SC945A(C)-T BUFFER
△ C446	E0E5TB010M	CE 1 UF 160V	Q601	TALT007330	2SA733(C)-T BUFFER
△ C448	E0E7T8100M	CE 10 UF 100V	Q602	TCLT009450	2SC945A(C)-T BUFFER
△ C502	P2612A224M	CMP 0.22 UF 125V	Q604	TALT007330	2SA733(C)-T BUFFER
△ C506	E01LFC561M	CE 560 UF 200V	Q801	TA3T016240	2SA1624(D.E)-AA RED OUTPUT
△ C507	E027TB101M	CE 100 UF 160V	Q802	TA3T016240	2SA1624(D.E)-AA GREEN OUTPUT
△ C813	C0JBB07H3K	CC 0.0022UF 2KV YB	Q803	TA3T016240	2SA1624(D.E)-AA BLUE OUTPUT
SEMICONDUCTORS			Q804	TC3F042170	2SC4217(D.E)-RAC RED AMP
D109	D1VT001320	DIODE.SILICON 1SS132T-77	Q805	TC3F042170	2SC4217(D.E)-RAC GREEN AMP
D110	D1VT001320	DIODE.SILICON 1SS132T-77	Q806	TC3F042170	2SC4217(D.E)-RAC BLUE AMP
D111	D1VT001320	DIODE.SILICON 1SS132T-77	Q903	TALT00952L	2SA952(C)-T L PEAK ACL
D112	D1VT001320	DIODE.SILICON 1SS132T-77	COILS & TRANSFORMERS		
D113	D1VT001320	DIODE.SILICON 1SS132T-77	L101	033090001M	COIL 3090001
D114	D1VT001320	DIODE.SILICON 1SS132T-77	L202	021JA6R22M	COIL 0.22 UH
D116	D1VT001320	DIODE.SILICON 1SS132T-77	L203	021S05R91K	COIL 0.91 UH
D121	D28T011E10	DIODE.SILICON 11E1TA1	L204	033602027G	COIL.VIDEO IFT 3602027
D122	D28T011E20	DIODE.SILICON 11E2TA1	L205	033602028G	COIL.VIDEO IFT 3602028
D123	D1VT001320	DIODE.SILICON 1SS132T-77	L206	021JA6150K	COIL 15 UH
D127	D15T015850	DIODE.SILICON 1S1585(TPE3)	L301	021JA6220K	COIL 22 UH
D131	D15T015850	DIODE.SILICON 1S1585(TPE3)	L401	022J000008	COIL LINEARITY 1429
D134	D92T05R1B2	DIODE.ZENER RD5.1EB 2 TA11R	L405	021679472K	COIL 4.7 MH
D139	D92T0300B4	DIODE.ZENER RD30EB 4 TA11R	△ L501	0291000001	COIL.LINE FILTER RB-20871
D150	D1VT001320	DIODE.SILICON 1SS132T-77	△ L502	028Q200008	COIL.DEGAUSS 8Q200008
D166	D28T011E10	DIODE.SILICON 11E1TA1	L602	021JA6220K	COIL 22 UH
D169	D28T10E100	DIODE.SILICON 10E10-TA2B5	L604	021JA6330K	COIL 33 UH
D170	D92T0150B1	DIODE.ZENER RD15EB 1 TA11R	L606	021JA6101K	COIL 100 UH
D181	D1VT001320	DIODE.SILICON 1SS132T-77	△ T351	045128007U	TRANS..SOUND OUTPUT 5128007
D193	D92006R8B2	DIODE.ZENER RD6.8EB 2	T401	03305Y002G	TRANS..HORIZONTAL DRIVE 305Y002
D351	D1VT001320	DIODE.SILICON 1SS132T-77	JACKS		
D352	D1VT001320	DIODE.SILICON 1SS132T-77	△ J351	060C121008	JACK.RCA 3.5 TC38-001
D401	D1VT001320	DIODE.SILICON 1SS132T-77	△ J801	0662130010	SOCKET.CRT HPS2360-01-020
D402	D1VT024720	DIODE.SILICON 1S2472T-77			
D403	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1			
D404	D28T011E10	DIODE.SILICON 11E1TA1			

ELECTRICAL REPLACEMENT PARTS LIST

INTERCHANGEABLE PARTS LIST

NOTE: THE FOLLOWING PART(S) MAY BE SUBSTITUTED FOR PARTS INDICATED IN THE ELECTRICAL REPLACEMENT PARTS LIST (WITH THE SAME REF. NO.). THESE PARTS SHARE THE SAME ELECTRICAL CHARACTERISTICS AND OTHER ELEMENTS FOR COMMON USAGE. EITHER PART NUMBER MAY BE USED IN THIS UNIT.

REF. NO	PART NO	DESCRIPTION	
SWITCHES (CONT)			
SW101	0504201T30	SKHVLH006B	CH UP
SW102	0504101029	EVQ-PFD 04R	POWER
SW103	0504201T30	SKHVLH006B	CH DOWN
SW104	0504201T30	SKHVLH006B	VOL. UP
SW105	0504201T30	SKHVLH006B	VOL. DOWN
SW106	0504201T30	SKHVLH006B	CLEAR
SW107	0510G41004	SSA-141P	TV/CATV
VARIABLE RESISTORS			
VR101	V1162L3BT1	VR, SEMIFIXED	3.3KB SUB BRIGHT
VR102	V1162U5BT1	VR, SEMIFIXED	680KB SUB COLOR
VR103	V1162H4BT1	VR, SEMIFIXED	22KB SUB TINT
VR201	V116314BT6	VR, SEMIFIXED	10KB RF AGC
VR401	V1163U4BT6	VR, SEMIFIXED	68KB V. SIZE
VR402	V1F5233BF7	VR, SEMIFIXED	3KB V. POSITION
VR403	V1163L4BT6	VR, SEMIFIXED	33KB H. POSITION
VR501	V1263H4BT7	VR, SEMIFIXED	22KB CONSTANT VOL.
P.C. BOARD ASSEMBLIES			
PCB001	A39709A01A	PCB ASS'Y	TM0216-Z1 MAIN
PCB003	A39709A11A	PCB ASS'Y	TC0122 CRT
PCB004	A39709A27A	PCB ASS'Y	TE0395 EARPHONE
MISCELLANEOUS			
△ ATC101	0633300008	ANT SHIELD BOX	APSB06AMU350H-WD
B401	0246451652	CORE, BEADS	BF25-4.5*5*1.6
BL001	063B200015	PLUG-FJ	2-U4009#02
CD351	068D82019A	CORD CONNECTOR	8D82019A
△ CD501	120T610306	CORD AC	120T610306
CD801	127A200005	BRAIDED WIRE	7-200005
CD802	068128037A	CORD, CONNECTOR	8128037A
CD803	068314294A	CORD, CONNECTOR	8314294A
CF201	1028045R73	FILTER, SAW	TSF1203M
CF202	1011T4R507	FILTER, CERAMIC	EFC-T4R5MW3
CF301	1012A4R504	FILTER, CERAMIC DISCRI.	CDA4.5ME42
CF302	1011T4R504	FILTER, CERAMIC	EFT4R5YS5A
CF401	1002R50303	CERAMIC OSCILLATOR	CSB503F15
CP351	069D320018	CONNECTOR PCB SIDE	TS-80P-02-V1
CP401	069D340018	CONNECTOR PCB SIDE	TS-80P-04-V1
CP501	0694430100	CORD, UX CONNECTOR	2-173270-3
CP502	069D420029	CONNECTOR PCB SIDE	TV-50P-02-A1
CP801	069D330018	CONNECTOR PCB SIDE	TS-80P-03-V1
CP802	0694280369	CONNECTOR PCB SIDE	175487-8
CP803	069X140199	CONNECTOR PCB SIDE	B4B-EH-A
CP806	069D010010	CONNECTOR PCB SIDE	005P-2100
△ DY801	027Z092002	DEFLECTION YOKE	7Z092002
△ F501	081DC04003	FUSE	4A 125V
△ FB401	0432200301	TRANSFORMER, FLYBACK	3220030
FH501	06760T0001	HOLDER, FUSE	PFC5000-0202
FH502	06760T0001	HOLDER, FUSE	PFC5000-0202
K001	129A000010	WEDGE	8115529
K002	129A000010	WEDGE	8115529
K003	129A000010	WEDGE	8115529
OS101	077S013001	REMOTE RECEIVER	SPS-409-1-G
△ RY101	0560120108	RELAY	AJZ32117
SP351	070R143005	SPEAKER	CP100006-01
△ TH501	D8R0BG8ROM	DEGAUSS ELEMENT	PTH451A103BG8ROM
TM101	076M012160	TRANSMITTER	R25-6654
△ TU001	0145S00028	TUNER, UHF-VHF	ENV-568B0G3
△ V801	092Z200411	CRT	G-A48ACB32X
X101	1002T4R102	CERAMIC OSCILLATOR	CST4.19MGW-TF01
X601	100C357903	CRYSTAL HC-49/U	3.579545MHZ

REF.NO	DESCRIPTION (PART NO)	DESCRIPTION (PART NO)
△ C352	22 UF 200V (E027TC220M)	22 UF 200V (E031TC220M)
△ C433	470 UF 35V (E02ST4471M)	470 UF 35V (E03YT4471M)
△ C442	0.0082UF1.6KV (P412A9822H)	0.0082UF1600V (P442A9822H)
△ C507	100 UF 160V (E027TB101M)	100 UF 160V (E011TB101M)
CF201	TSF1203M (1028045R73)	TSF1203C (1028045R71)
△ FB401	3220030 (0432200301)	3220030 (043220030M)
FH501	PFC5000-0202 (06760T0001)	EYF-52BC (06710T0006)
FH502	PFC5000-0202 (06760T0001)	EYF-52BC (06710T0006)
△ J801	CVT3245-0521 (0666130012)	HPS2360-01-020 (0662130010)

THE LISTED PARTS ARE INTERCHANGEABLE WITH ONE COMPLETE BLOCK AS FOLLOWS.

REF.NO	DESCRIPTION (PART NO)	DESCRIPTION (PART NO)
CF401	CSB503F15 (1002R50303)	CSB503F45 (1002R50304)
△ IC201	LA7671 (103DE76710)	LA7671N (103DE7671N)
R540	2.7M OHM 1/6W (R001T6275J)	

RESISTOR
RC.....CARBON RESISTOR

CAPACITORS
CC.....CERAMIC CAPACITOR
CE.....ALUMI ELECTROLYTIC CAPACITOR
CP.....POLYESTER CAPACITOR
CPP.....POLYPROPYLENE CAPACITOR
CPL.....PLASTIC CAPACITOR
CMP.....METAL POLYESTER CAPACITOR
CMPL.....METAL PLASTIC CAPACITOR
CMPP.....METAL POLYPROPYLENE CAPACITOR
CST.....STYROL CAPACITOR